Chapter 2 : Linear Systems
Systems of Linear Equations

Unit Title: Futurama

Unit Question: Where am I Going?

Learner Profile: Reflective

Area of Interaction:
Health & Social Education

I Can Statement:

I can solve a system of linear equations using elimination.

Vocabulary

System of Linear Equations:
a set of 2 (or more) linear equations.

Solution to a System of Linear Equations:
an ordered pair that makes each equation true.

You can use **Elimination** - adding two equations together to eliminate one variable to solve a system.

Example 1:

$x - y = 4$

$x + y = 2$

$2x + 0 = 6$

$2x = 6$

$x = 3$

Example 2:

$3x - 5y = -16$

$2x + 5y = 31$

$5x + 0 = 15$

$5x = 15$

$x = 3$

Example 3:

$5x + 2y = 6$

$9x + 2y = 22$

$9x + 2y = 22$

$-5x + 2y = 6$

$4x = 16$

$x = 4$!!

Example 4:

$x - 2y = 5$

$3x - 2y = 9$

$3x - 2y = 9$

$-x + 2y = -5$ sub

$2x = 4$

$x = 2$

Elimination Using Multiplication:
Is used when neither variable in the system can be eliminated by simply adding or subtracting the equations.

However, you can use the Multiplicative Property of Equality so that adding or subtracting eliminates one of the variables.

Example 1:

$3x + 4y = 6$

$5x + 2y = -4$

$3x + 4y = 6$

$10x + 4y = -8$

$-7x = 14$

$x = -2$

Example 2:

$-5x + 3y = 6$

$x - y = 4$

$-5x + 3y = 6$

$-5x + 5y = -20$

$0 \quad -2y = 26$

$y = -13$

Maybe

$-5x + 3y =$

$-3x \quad 13x = -2$

$-2x = 18$

$x = -9$

Example 3:

$3x + 4y = -25$

$2x - 3y = 6$

$3x+4y=-25$

$(2x-3y=6)\cdot 1.5$

$3x-4.5y=9$

$3x+4y=-25$

$3x-4.5y=9$

$8.5y=-34$

$y=-4$

$6x+8y=-50$

$6x-9y=18$

$17y=-68$

$\frac{17y}{17}=\frac{-68}{17}$

$y=-4$

$3x+4y=25$

$(2x-3y=6)\frac{4}{3}$

$\frac{8}{3}x-4y=8$

$3x+4y=-25$

$\frac{8}{3}x-4y=8$

$\frac{17}{3}x=-17$

$\frac{\frac{17}{3}x}{\frac{17}{3}}=\frac{-17}{\frac{17}{3}}$

$\frac{17}{1}\cdot\frac{3}{17}=-3=x$

Solving a System of Linear Equations: Using Elimination

What are the advantages?

What are the disadvantages?

Assignment:

Worksheet